DIVISION OF INDUSTRY SERVICES
Plumbing Product Review
P.O. Box 2658
Madison, Wisconsin 53701-2658
TTY: Contact Through Relay

Scott Walker, Governor
Dave Ross, Secretary

June 25, 2014

DIAMOND WATER CONDITIONING
JOHN GRIESBACH / DAN SCHLENZ
N1022 QUALITY DRIVE
PO BOX 170
GREENVILLE WI 54942

Re: Description: WATER TREATMENT DEVICE - SOFTENER/CATION EXCHANGE
Manufacturer: DIAMOND WATER CONDITIONING
Product Name: FREEDOM RUSTMASTER
Model Number(s): DCS7-15-100-RM, DCS7-24-100-RM, DCS7-30-100-RM, DCS7-45-100-RM, DCS7-60-100-RM, DCS7-75-100-RM AND DCS7-90-100-RM
Product File No: 20140172

The specifications and/or plans for this plumbing product have been reviewed and determined to be in compliance with chapters SPS 382 through 384, Wisconsin Administrative Code, and Chapters 145 and 160, Wisconsin Statutes.

The Department hereby issues an approval based on the Wisconsin Statutes and the Wisconsin Administrative Code. This approval is valid until the end of June 2019.

This approval is contingent upon compliance with the following stipulation(s):

- This product has undergone sufficient testing to document the product's ability to reduce only those contaminants and/or substances as specified in this approval letter when the product is installed and maintained in strict accordance with the manufacturer's published instructions.

- Where the Department of Natural Resources (DNR) has jurisdiction, a written approval may be required prior to installation of this product in a water supply system to reduce the concentration of a contaminant that exceeds the primary drinking water standards contained in ch. NR 809, Wis. Admin. Code, the enforcement standards contained in ch. NR 140, Wis. Admin. Code, or for a water supply system that is subject to a written advisory opinion by the DNR. For more information contact the DNR Section of Private Water Systems, P.O. Box 7921, Madison, WI 53707, telephone (608) 267-9787.

- If these approved devices are modified or additional assertions of function or performance are made, then this approval shall be considered null and void, unless the change is submitted to the department for review and the approval is reaffirmed.

- These cation exchange water softeners shall be sized, installed, programmed and maintained such that wastewater volumes, total dissolved solids and chloride discharges are minimized.

- The department does not recommend the use of water softeners for reducing dissolved iron concentrations in excess of 3.0 mg/l. This is because applying water softeners in this way sacrifices long-term water softener performance and efficiency. The use of water softeners for reducing dissolved iron concentrations exceeding 3.0 mg/l also generates excessive, and otherwise avoidable, quantities of chloride and dissolved solids which are subsequently discharged to ground and/or surface water supplies. Once present in ground and/or surface water supplies, chloride and dissolved solids tend to remain in the water resource and may travel great distances from the original point source. Presently, there are no economically viable methods to remove chloride and dissolved solids from water supplies because available technologies generate waste streams of their own, further concentrating the problem. It has been established by the Wisconsin Department of Natural Resources that chloride is chronically toxic to representative aquatic organisms, including forage and sport fish, at 395 mg/l, and acutely toxic at 757 mg/l.

- These devices are not approved for the reduction of bacterial, colloidal or organically bound forms of iron.

  The water must be tested to speciate the iron present to determine if these devices can provide adequate treatment.

- A properly sized electrical bonding jumper must be installed across the inlet and outlet piping when these devices are installed on metallic piping systems.

\Based on testing data submitted to and reviewed by the department, this approval recognizes that these plumbing products will reduce the concentration of contaminants as specified on pages 1 through 2 of this letter.

WATER SOFTENING CAPABILITIES
PRODUCT FILE NUMBER 20140172
TABLE 1 OF 2

Model Numbers	**Capacity***				**Flow Rate vs.**
Freedom Rustmaster Series	**Min. Rating 1**		**Max. Rating 2**		**Pressure Loss**
Demand Initiated	**Grains**	**Pounds**	**Grains**	**Pounds**	**gpm @ psig**
DCS7-15-100-RM	15,000	5.0	17,500	7.5	4.5 @ 15.0
DCS7-24-100-RM	22,500	7.5	26,000	11.3	4.5 @ 15.0
DCS7-30-100-RM	30,000	10.0	35,000	15.0	5.0 @ 15.0
DCS7-45-100-RM	45,000	15.0	52,500	22.5	6.0 @ 15.0
DCS7-60-100-RM	60,000	20.0	70,000	30.0	8.5 @ 15.0
DCS7-75-100-RM	75,000	25.0	87,500	37.5	9.0 @ 15.0
DCS7-90-100-RM	90,000	30.0	105,000	45.0	10.0 @ 15.0

* The softener capacity rating is based on grains of hardness, due to calcium and magnesium cations, removed (as calcium carbonate) while producing soft water between successive regenerations and is related to the pounds of salt required for each regeneration. The tests run to generate the data for table 1 of 2 were conducted in accordance with NSF Standard 44 by TG Analytical Laboratories, a subsidiary of Griesbach Company/Diamond Water.

DISSOLVED IRON CAPABILITIES
PRODUCT FILE NUMBER 20140172
TABLE 2 OF 2

Model Numbers	**Capacity***	
Freedom Rustmaster Series	**Max. Rating**	
Demand Initiated	**PPM-GAL[1]**	**Pounds**
DCS7-15-100-RM	2,100	5.0
DCS7-24-100-RM	3,200	7.5
DCS7-30-100-RM	4,300	10.0
DCS7-45-100-RM	6,500	15.0
DCS7-60-100-RM	8,600	20.0
DCS7-75-100-RM	10,800	25.0
DCS7-90-100-RM	13,000	30.0

*The tests run to generate the data for table 2 of 2 were conducted in accordance with NSF Standard 42 by TG Analytical Laboratories, a subsidiary of Griesbach Company/Diamond Water.

1 = ppm-gal are an abstract unit of measure. The ppm-gal is the product of the tested dissolved iron concentration and the volume of treated water. In this case, the tested influent concentration was 3.34 mg/l and the tested capacity was 1,300 gallons, thus 3.43 ppm x 1,300 gals. = 4,342 ppm-gal for the tested model (i.e. DCS7-30-100-RM). Once we know what the capacity is in terms of ppm-gal we can derive the estimated capacity for a range of dissolved iron concentrations that are above or below the influent challenge concentrations. For example, if the influent dissolved iron concentration was 5.0 ppm, then the capacity in gallons for the tested model (i.e. DCS7-30-100-RM) would be 4,342 ppm-gals/5 ppm onsite dissolved iron = 868.4 gallons. If dissolved iron and hardness occur together, then each ppm of dissolved iron should be counted as 5 gpg of hardness for the purpose of programming the valve.

This device was tested under controlled laboratory, or field, conditions. The actual performance of this device for a specific end use installation will vary from the tested conditions based on local factors such as water pressure, water temperature and water chemistry.

The department is in no way endorsing this product or any advertising, and is not responsible for any situation which may result from its use.

Sincerely,

Glen W. Schlueter
Environmental Engineer - Plumbing Product Reviewer
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